**CSMISS IT Seminar Series**

# Robust Software Design: The Art and Science of Error Containment


*by*

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***12:00 – 1:00 P.M.***
***167 Conference Room***

The increasing complexity of today's software is due in part to its growing number of intricate, interrelated structures. These structures make it possible for software to act as a critical component of many embedded applications. These same structures, however, may also amplify the impact of errors in the software, which can lead to service outages and, ultimately, an adverse affect on system dependability. Software developers need a method to improve software robustness to errors - and one possible technique is the systematic use of Executable Assertions (EAs).

Traditionally, these Executable Assertions have been placed in the code in an ad-hoc manner. This talk will reveal how recent approaches to error propagation analysis now show that the developer can systematically establish the locations of EAs in the software. The developer can also determine the EA properties for effective error containment. Finally, the talk will address how building conformal relationships between EAs is even more useful in developing robust distributed software than ad-hoc assertion placement.

Neeraj Suri received his Ph.D. from the University of Massachusetts at Amherst. He currently holds the TU Darmstadt Endowed Chair Professorship in "Dependable Embedded Systems and Software" at TU Darmstadt, Germany and is also a faculty member at the University of Texas at Austin. Before going to TU Darmstadt, he held the Saab Professorship at Chalmers and was earlier at Boston University. His research interests focus on design, analysis and assessment of dependable embedded systems and software. His current research is emphasizing (a) robustness hardening of software and (b) formal verification along with experimental validation of protocols, embedded software and operating systems. His group's research activities garner support from DARPA, NSF, ONR, European Commission, NASA, Boeing, Microsoft, Intel, Saab, Volvo and Daimler Chrysler among others. He is also a recipient of the NSF CAREER award.

Dr. Suri serves as an editor for ACM Computing Surveys covering Embedded Systems, and has been an editor for the IEEE Trans. on Parallel and Distributed Systems. He is a member of IFIP WG 10.4 and on the board for Microsoft's Academic Advisory Board for Trustworthy Computing. More research and professional details are available at http://www.deeds.informatik.tu-darmstadt.de/

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